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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KLAUS SCHULTES, THOMAS SUEFKE,  
REINER MUELLER, HARTMUT SCHIKOWSKY,  
and WENER HOESS

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Appeal 2010-005278  
Application 10/539,132  
Technology Center 1700

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Before CHUNG K. PAK, KAREN M. HASTINGS, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> Oral arguments were heard in this appeal on April 12, 2011.

Appellants appeal under 35 U.S.C. § 134 the final rejection of claims 18, and 20-38. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

Appellants' invention is said to be directed to a process for preparing in aqueous dispersions core-shell particles which can be used for impact-modification of poly(meth)acrylate molding compositions (Spec. 1: 4-8).

Claims 18, 29, and 30 are illustrative:

18. A process for preparing an aqueous polymer dispersion, by

a) preparing an initial charge of an aqueous emulsion of a long chain alkyl alcohol or a seed latex by polymerization of an alkyl (meth)acrylate in an aqueous medium comprising an emulsifier to a seed particle radius ranging from 3.0 to 20.0 nm

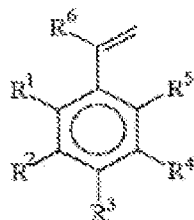
b) adding from 25.0 to 45.0 parts by weight of a first composition comprising:

A) from 50.0 to 99.9 parts by weight of an alkyl (meth)acrylate having from 1 to 20 carbon atoms in the alkyl radical,

B) from 0.0 to 40.0 parts by weight of an alkyl acrylate having from 1 to 20 carbon atoms in the alkyl radical,

C) from 0.1 to 10.0 parts by weight of a crosslinking monomer, and

D) from 0.0 to 8.0 parts by weight of a styrenic monomer of the formula (I)



(I)

where each of the radicals R<sup>1</sup> to R<sup>5</sup>, independently of the others, is hydrogen, a halogen, a C<sub>1-6</sub>-alkyl group or a C<sub>2-6</sub>-alkenyl group, and the radical R<sup>6</sup> is hydrogen or an alkyl group having from 1 to 6 carbon atoms, emulsified in water with an emulsifier, to said aqueous emulsion or seed latex, and

polymerizing the added monomers to a conversion of at least 85.0% by weight, based on the total weight of components A), B), C) and D),

c) adding from 35.0 to 55.0 parts by weight of a second composition comprising

E) from 80.0 to 100.0 parts by weight of a (meth)acrylate,

F) from 0.05 to 10.0 parts by weight of a crosslinking monomer, and

G) from 0.0 to 20.0 parts by weight of a styrenic monomer of the formula (I), emulsified in water with an emulsifier, to the aqueous polymer emulsion of step (b), and

polymerizing the added monomers to a conversion of at least 85.0% by weight, based on the total weight of components E), F) and G),

d) adding from 10.0 to 30.0 parts by weight of a third composition comprising:

H) from 50.0 to 100.0 parts by weight of an alkyl (meth)acrylate having from 1 to 20 carbon atoms in the alkyl radical,

I) from 0.0 to 40.0 parts by weight of an alkyl acrylate having from 1 to 20 carbon atoms in the alkyl radical, and

J) from 0.0 to 10.0 parts by weight of a styrenic monomer of the formula (I), emulsified in water with an emulsifier, to the aqueous polymer emulsion of step (c),

and polymerizing to a conversion of at least 85.0% by weight, based on the total weight of components H), I) and J),

where the parts by weight given for the compositions b), c) and d) give a total of 100.0 parts by weight,

wherein

e) each polymerization is carried out at a temperature in the range from above 60 to below 90° C and

f) the relative proportions of all of the substances are selected in such a way that the total weight of components A) to J), based on the total weight of the aqueous dispersion, is greater than 50.0% by weight, the product particles have a particle size ranging from 150 to less than 250 nm, and the amount of coagulate in the dispersion is 0.1% or less by wt, based on the total weight of the dispersion.

29. Core-shell particles obtained by a process according to claim 18.

30. A moulding composition comprising:

based in each case on its total weight, of

A) from 1.0 to 50.0% by weight of at least one core-shell particle according to Claim 29,

B) from 1.0 to 99.0% by weight of at least one (meth)acrylic polymer,

C) from 0.0 to 45% by weight of at least one styrene-acrylonitrile polymer, and

D) from 0.0 to 10.0% by weight of other additives where the percentages by weight give 100.0% by weight in total.

Appellants appeal the following rejections:

1. Claims 18, 20-23, 25-31, and 34-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hofmann (US Patent 4,180,529 issued Dec. 25, 1979) and De Witt (US Patent 4,173,596 issued Nov. 6, 1979).
2. Claims 18, 20, 21, 25-31, and 34-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hofmann in view of Takarabe (US Patent 4,914,142 issued Apr. 3, 1990).
3. Claims 18, 20, 21, 24-31, and 34-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hofmann in view of Morningstar (US Patent 4,371,677 issued Feb. 1, 1983).
4. Claim 32 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hofmann in view of De Witt and Falk (US Patent 4,542,179 issued Sept. 17, 1985) or Hofmann in view of Morningstar and Falk.
5. Claim 33 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hofmann in view of De Witt and Shah (US Patent 5,777,034 issued July 7, 1998) or Hofmann in view of Morningstar and Shah.

With regard to all the rejections Appellants' arguments focus on independent process claim 18 (App. Br. 6-14). For reasons evident below we separately address product-by-process claim 29 and claims 30-36 that

ultimately depend therefrom. Claims 32 and 33 under rejections (4) and (5) will be addressed with the product-by-process claim analysis.

*Process Claim 18*

ISSUE

Did the Examiner reversibly err by failing to establish that Hofmann in view of De Witt, Takarabe, or Morningstar would have suggested a process in which each of a first, second, and third composition are emulsified in water with an emulsifier and then added to the aqueous polymer emulsion as recited in claim 18? We decide this issue in the affirmative.

FINDINGS OF FACT AND ANALYSES

Claim 18 states that a first, second and third composition are “emulsified in water with an emulsifier” and then each composition is added “to said aqueous emulsion” of the preceding step. The plain meaning of this claim requires that the first, second, and third compositions are each emulsified in water with an emulsifier and then each of these first, second, and third composition emulsions are added to the aqueous emulsion.

Appellants argue that Hofmann does not teach the compositions added to the aqueous emulsion are themselves emulsions prior to addition (App. Br. 8, 10, 12).

The Examiner responds that Hofmann discloses using an emulsifier SDOSS and KPS (1%  $K_2S_2O_8$  in demineralized water) in each of the stages of the polymerization such that the components in each of Hofmann’s stages are in emulsified form (Ans. 16).

However, Appellants correctly argue that Hofmann discloses that the KPS is used to initiate reaction, not to form an emulsion (Reply Br. 3; Hofmann, col. 5, ll. 56-58). The Examiner has not explained how the addition of the KPS that contains demineralized water and is used to initiate a reaction also forms an emulsion. The Examiner has not provided any reasoning or rationale to support his conclusory statement that the addition of the KPS containing demineralized water forms an emulsion of the monomers in each stage. The Examiner has not met his burden of establishing the claimed process in which an emulsion of each of a first, second, and third composition is added to an aqueous emulsion as required by claim 18 would have been obvious.

For these reasons, we reverse the § 103 rejection of process claims 18, and 20-28 over Hofmann in view of either De Witt, Takarabe, or Morningstar.

*Product-by-Process Claim 29*

ISSUE

Did the Examiner reversibly err in determining that product-by-process claim 29 would have been obvious over the combination of Hofmann and either De Witt, Takarabe, or Morningstar? We decide this issue in the negative.

FACTUAL FINDINGS & ANALYSIS

Appellants do not separately argue the product-by-process claim 29 or the moulding composition claims 3031 and the moulding claims 34-36 that ultimately depend from claim 29 (App. Br. 6-14). Appellants arguments



regarding moulding composition claims 32 and 33 merely refer to their arguments made regarding process claim 18 and that Falk or Shah fail to remedy the deficiencies of Hofmann and either De Witt, or Morningstar (App. Br. 12-14). Nevertheless, we separately treat these claims because they are on a different footing than the process claims.

Though product-by-process claims are limited and defined by the process, the determination of patentability is based on the product itself. *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985). The patentability of the product does not depend on its method of production. *Id.* If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *Id.*

With this proper perspective in mind, we construe claim 29 as requiring a core polymer surrounded by three shells of polymeric material. Notably, Appellants do not dispute the Examiner's finding that the monomers used by Hofmann to make the core and shells are the same as those used by Appellants or that Hofmann teaches using three stages to form three shells on the seed/core of the polymer (Ans. 5-11; App. Br. 6-14; Reply Br. 1-4). Appellants further do not dispute that Hofmann teaches the proportions of components (A) to (J) in claim 18. *Id.* Hofmann, as found by the Examiner, discloses forming a core or seed layer on which multiple additional stages of polymerized material are formed (col. 2, ll. 49-68).

In view of these undisputed findings, we agree with the Examiner that Hofmann in view of either De Witt, Takarabe, or Morningstar would have rendered obvious core-shell particles having three shells of polymer on the core with the particular composition of claim 18 as required by the product-

by-process claim 29. Accordingly, the burden shifted to Appellants to demonstrate that Appellants' core-shell particles differ from the core-shell particles of the prior art. *Thorpe*, 777 F.2d at 698 (citing *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977)). However, Appellants have not shown any structural difference between their core-shell particles and those of the prior art.<sup>2</sup>

For these reasons, we affirm the Examiner's § 103 rejections of claims 29-31, 34-38 over Hofmann in view of either De Witt, Takarabe, or Morningstar; claim 32 over Hofmann in view of either De Witt or Morningstar and Falk; and claim 33 over Hofmann in view of either De Witt or Morningstar and Shah.

#### DECISION

The Examiner's decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136.

#### ORDER

#### AFFIRMED-IN-PART

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<sup>2</sup> When asked during oral argument whether core and shell particles of the prior art differ from the claimed core and shell particles, Appellants responded that the Specification contained examples that show that the claimed particles are different than the prior art particles. However, Appellants have stated that they have not compared the particles of Hofmann with those obtained by Appellants' process because, in their opinion, such a comparison would "prove nothing" (Reply Br. 2). To the contrary, as product-by-process claims the process used to make the product is not critical if the product could be made by another process. In this case, Appellants have the burden to show that Hofmann's core-shell particles are structurally different than Appellants; such a distinction has not been established.

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